

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Enhancing suicide risk assessment through the use of visual  
metaphor**

**A thesis presented in partial fulfillment of the requirements  
for the degree of**

**Master of Health Science**

**in**

**Psychology**

**at Massey University, [Albany Campus],**

**New Zealand**

**Mohsen Alyami**

**July, 2016**

## QUOTATION

“Knowledge is a processing of piling up facts, wisdom lies in their  
simplification”

Martin H. Fisher

“Tell me and I forget. Show me and I remember. Involve me, and I  
understand”

A Chinese Proverb

## ABSTRACT

Competent assessment and management of the risk of harm is a core competency that mental health professionals are expected to possess. However, despite this expectation, adequate training programs have been lacking for decades and, even when risk assessment training is provided, it is often reported as being insufficient. The literature indicates that training delivery methods often include passive and didactic methods during supervision or seminar sessions. To help enhance the learning of suicide risk factors, some authors proposed a visual metaphor that visually and metaphorically depicts all suicide risk factors. The main purpose of this study was to examine the efficacy of the proposed visual metaphor.

A pilot RCT was undertaken to test several hypotheses, all of which predicted that the visual metaphor would demonstrate superior effects when compared with the conventional textual teaching methods. A group of 22 psychology students were randomized into either a control group (who learnt suicide risk factors via the conventional textual teaching methods) or a treatment group (that learnt the risk factors using the visual metaphor in addition to the conventional textual teaching methods). Memory recall, knowledge transfer, cognitive load, and satisfaction were all tested at the end of the learning sessions.

Independent samples *t* tests indicated that the visual metaphor was effective in improving memory recall and knowledge transfer and reducing the cognitive load. The differences between the two groups' post-learning scores were significant in each of these outcome measures. The treatment group also expressed higher satisfaction levels in comparison to the control group. Overall the visual metaphor of suicide risk factors was found to be superior to the conventional teaching methods in teaching suicide risk

factors to university psychology students. Limitations, implications of this study and directions for future research are discussed.

## **ACKNOWLEDGEMENTS**

I am immensely appreciative for the supervisory unwavering support I have received from my supervisor Dr. Bev Haarhoff. I am, among many students, at Massey University who have tremendously benefitted from Bev's clinical experience, pragmatic, sound advice, common sense, and constructive approach to supervision.

My appreciation also extends to my uncle and colleague Dr. Hussain Alyami (MD and psychiatric registrar). I could not have asked for a better role model. Thank you for your collective and constructive input in developing the visual metaphor. Dr. Ali Al Mansour, thank you for your friendship and encouragement along the way.

Special thanks also go to my participants. Without you, this project would not have seen the light. To Pita King (Graduate Assistant at the School of Psychology), thank you for your support and sound advice.

The Massey University Human Ethics Committee is greatly appreciated for their constructive feedback, comments, and approval of this project. My thanks also go to the School of Psychology for funding my research project.

I would also like to acknowledge and thank the Ministry of Higher Education and the Saudi Arabian Cultural Mission in Auckland (SACM) for granting me a scholarship to undertake my master degree in New Zealand. Thank you for the support.

Finally, to my parents, thank you for your unconditional love and for raising me the person who I am today. To my beautiful wife Fatimah and lovely daughters Juri and Kadi, your love, support, and unwavering faith have been the ultimate source of motivation. Words could not do justice, but my heartfelt thanks go to you all.

**Mohsen Alyami (July, 2016)**

## TABLE OF CONTENTS

QUOTATION.....	ii
ABSTRACT .....	iii
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS .....	vi
LIST OF TABLES.....	ix
LIST OF FIGURES .....	x
LIST OF APPENDICES .....	xi
CHAPTER ONE: INTRODUCTION .....	1
1.1. Introduction.....	1
1.1.1. Rationale for the Present Study.....	4
1.1.2. Learning Styles .....	6
1.2. Research Questions, Hypotheses, and Objectives .....	9
1.2.1. Research Significance.....	11
1.2.2. Overview of Chapters .....	12
CHAPTER TWO: LITERATURE REVIEW .....	14
Part One: Suicide.....	14
2.1. Introduction.....	14
2.1.2. Global Suicide Statistics.....	15
2.1.3. New Zealand Suicide Statistics.....	17
2.1.4. Suicide Risk Factors .....	22
2.1.4.1. Static Risk Factors of Suicide .....	22
2.1.4.2. Dynamic Risk Factors of Suicide.....	23
2.1.5. Conclusion.....	27
Part Two: Visual Metaphor.....	28
2.2. Introduction.....	28
2.2.1. Visual Metaphor .....	28

2.2.2. Comprehension of Visual Metaphor .....	31
2.2.3. Visual Metaphor and Culture .....	36
2.2.4. Benefits and Limitations of Visual Metaphor .....	37
2.2.5. Conclusion .....	38
<b>Part Three: Theoretical Framework: An Instructional Design Theory .....</b>	<b>40</b>
2.3. Introduction .....	40
2.3.1. Cognitive Load Theory (CLT) .....	40
2.3.2. Working Memory .....	41
2.3.3. Long-Term Memory, Schemas, and Learning .....	42
2.3.4. Components of CLT .....	43
Intrinsic Cognitive Load .....	44
Extraneous Cognitive Load .....	45
Germane Cognitive Load .....	45
2.3.5. Instructional Design Strategies Suggested by the CLT .....	46
2.3.6. CLT and the Current Visual Metaphor .....	47
2.3.7. Conclusion .....	48
<b>CHAPTER THREE: METHODS .....</b>	<b>50</b>
3.1. Introduction .....	50
3.2. Research Questions and Hypotheses .....	50
3.3. Study Design .....	51
3.4. Participant Recruitment .....	52
3.5. Measures .....	52
3.5.1. Introduction .....	52
3.5.2. Questionnaires .....	53
3.5.2.1. Demographic Survey .....	53
3.5.2.2. Memory Retention Test .....	53
3.5.2.3. Knowledge Transfer: Suicide Risk Vignette .....	54
3.5.2.4. The Paas Cognitive Load Rating Scale .....	55
3.5.2.5. Satisfaction Questionnaire .....	56
3.5.3. Development of the Visual Metaphor of Suicide Risk Factors .....	56
3.5.3.1. Challenges .....	70



3.6. Procedure .....	71
3.6.1. Random Allocation and Blinding .....	71
3.6.2. The Nature of the Teaching Content .....	72
3.6.3. Hands-on Procedure .....	73
3.7. Data collection.....	75
3.8. Data Analysis .....	75
3.9. Ethical Considerations.....	77
<b>CHAPTER FOUR: RESULTS .....</b>	<b>81</b>
4.1. Demographic Characteristics of Participants.....	81
4.2. First Dependent Variable: Memory Retention .....	83
4.3. Second Dependent Variable: Knowledge Transfer.....	84
4.4. Third Dependent Variable: Cognitive Load.....	85
4.5. Satisfaction Levels .....	86
<b>CHAPTER FIVE: DISCUSSION and CONCLUSION.....</b>	<b>89</b>
5.1. Introduction.....	89
5.2. Summary of the Findings.....	90
5.3. Discussion.....	90
5.4. Implications .....	96
5.5. Limitations of the Present Study.....	97
5.6. Recommendations for Future Research.....	99
5.7. Overall Conclusion.....	100
<b>REFERENCES.....</b>	<b>101</b>
<b>APPENDICES .....</b>	<b>144</b>

## LIST OF TABLES

<b>Table 1.</b>	Highest Rates of Suicide by Country in 2012 -----	16
<b>Table 2.</b>	Lowest Rates of Suicide by Country in 2012 -----	17
<b>Table 3.</b>	Rates of Suicide by Year, Sex, and Age-Standardized Rates (2007-2012) --	18
<b>Table 4.</b>	Suicide Rates by Five-Year Age Group and Sex, 2012 -----	19
<b>Table 5.</b>	Suicide Deaths by Ethnicity, Life-Stage Group, and Sex, 2012 -----	20
<b>Table 6.</b>	Suicide Risk Factors -----	27
<b>Table 7.</b>	Activated Brain Areas While Comprehending Four Types of Metaphor ----	34
<b>Table 8.</b>	Static Suicide Risk Factor and Corresponding Visual Metaphors -----	65
<b>Table 9.</b>	Dynamic Suicide Risk Factors and Corresponding Visual Metaphors -----	66
<b>Table 10.</b>	Dynamic Suicide Risk Factors and Corresponding Visual Metaphors (continue) -----	68
<b>Table 11.</b>	Demographic Characteristics of Participants -----	81
<b>Table 12.</b>	Mean Scores and Standard Deviations of the Dependent Variables -----	87
<b>Table 13.</b>	Results of Independent Samples <i>t</i> Tests -----	88

## LIST OF FIGURES

<b>Figure 1.</b>	Common methods used to commit suicide in 2012 -----	21
<b>Figure 2.</b>	An Example of visual metaphor -----	30
<b>Figure 3.</b>	A visual metaphor depicting Freud's concept; The Ego and the Id -----	31
<b>Figure 4.</b>	An example of a cultural-specific visual metaphor-----	36
<b>Figure 5.</b>	A diagram showing all phases involved in the current study -----	51
<b>Figure 6.</b>	Developmental process of the visual metaphor -----	57
<b>Figure 7.</b>	Initial draft of the visual metaphor of suicide risk factors-----	61
<b>Figure 8.</b>	A draft incorporating improvements based on the CLT design principles -----	62
<b>Figure 9.</b>	The visual metaphor undergoing further refinement -----	62
<b>Figure 10.</b>	Visual metaphor of static suicide risk factors -----	64
<b>Figure 11.</b>	Part one of dynamic suicide risk factors -----	65
<b>Figure 12.</b>	Part two of dynamic suicide risk factors -----	67
<b>Figure 13.</b>	The visual metaphor of suicide risk factors -----	69
<b>Figure 14.</b>	Random allocation carried out by a computer software -----	74
<b>Figure 15.</b>	Gender of participants -----	82
<b>Figure 16.</b>	Age of participants-----	82
<b>Figure 17.</b>	Ethnic groups of participants-----	83

## **LIST of APPENDICES**

<b>Appendix A.</b>	<b>The Visual Metaphor of Suicide Risk Factors</b>	<b>144</b>
<b>Appendix B.</b>	<b>Control Group Questionnaire</b>	<b>145</b>
<b>Appendix C.</b>	<b>Intervention Group Questionnaire</b>	<b>150</b>
<b>Appendix D.</b>	<b>Study Advertisement</b>	<b>155</b>
<b>Appendix E.</b>	<b>Participant Information Sheet</b>	<b>156</b>
<b>Appendix F.</b>	<b>Ethical Approval</b>	<b>160</b>
<b>Appendix G.</b>	<b>Permission to Use the Paas Cognitive Load Scale</b>	<b>161</b>
<b>Appendix H.</b>	<b>Publication {in press}</b>	<b>162</b>